



A.D. 1870, 7th May. N° 1311.

S P E C I F I C A T I O N

OF

ROBERT WEARE.

TREATING SEWAGE, &c.

LONDON:

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A.D. 1870, 7th MAY. N^o 1311.

Treating Sewage, &c.

LETTERS PATENT to Robert Weare, of Newcastle-under-Lyme, in the County of Stafford, Sanitary Contractor, for the Invention of “**IMPROVEMENTS IN APPARATUS FOR RECEIVING AND TREATING SEWAGE AND OTHER NOXIOUS MATTERS.**”

Sealed the 26th July 1870, and dated the 7th May 1870.

PROVISIONAL SPECIFICATION left by the said Robert Weare at the Office of the Commissioners of Patents, with his Petition, on the 7th May 1870.

I, ROBERT WEARE, of Newcastle-under-Lyme, in the County of Stafford, Sanitary Contractor, do hereby declare the nature of the said Invention for “**IMPROVEMENTS IN APPARATUS FOR RECEIVING AND TREATING SEWAGE AND OTHER NOXIOUS MATTERS,**” to be as follows:—

This Invention has for its object improvements in apparatus for receiving and treating sewage and other noxious matters. In order to
10 free the sewage from foul matter so as to render the liquid innocuous and obtain from the sewage a valuable manure, I employ an outer closed vessel or tank containing within it an inner vessel or tank with per-

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forated sides. The space between the perforated sides of the inner vessel or tank, and the sides of the outer vessel or tank is packed with ashes, charcoal, or other deodorizing or purifying material. The sewage is received from the sewer into the inner perforated vessel or tank, it filters through the deodorizing or purifying material, and so passes 5 through the outer vessel or tank into one or more closed vessels or tanks similarly constructed and fitted, and eventually the liquid portion passes from such vessels or tanks as purified water, which may without nuisance or injury be allowed to enter a river or stream. From time to time the residuum is dug out from the several vessels or tanks in a 10 deodorized condition, and is afterwards available as a valuable dry and inoffensive manure. I employ tanks similarly constructed and fitted for purifying noxious liquids discharged from print works, dye works, and such other manufacturing establishments as discharge noxious liquids. For constructing commodes or apparatus so as to deodorize or disinfect 15 excrementitious matter I apply to a suitable receptacle an air-tight cover fitted by means of an india-rubber or other packing ring, and in the cover is a perforated box containing charcoal or other deodorant or disinfectant. Any foul air escaping from the receptacle thus has to permeate the purifying material and is so rendered innocuous.

SPECIFICATION in pursuance of the conditions of the Letters Patent, filed by the said Robert Weare in the Great Seal Patent Office on the 7th November 1870.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, ROBERT WEARE, of Newcastle-under-Lyme, in the County of Stafford, Sanitary 25 Contractor, send greeting.

WHEREAS Her most Excellent Majesty Queen Victoria, by Her Letters Patent, bearing date the Seventh day of May, in the year of our Lord One thousand eight hundred and seventy, in the thirty-third year of Her reign, did, for Herself, Her heirs and successors, give and 30 grant unto me, the said Robert Weare, Her special licence, that I, the said Robert Weare, my executors, administrators, and assigns, or such others as I, the said Robert Weare, my executors, administrators, and assigns, should at any time agree with, and no others, from time to time and at all times thereafter during the term therein expressed, 35

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should and lawfully might make, use, exercise, and vend, within the United Kingdom of Great Britain and Ireland, the Channel Islands, and Isle of Man, an Invention for “IMPROVEMENTS IN APPARATUS FOR RECEIVING AND TREATING SEWAGE AND OTHER NOXIOUS MATTERS,” upon the
5 condition (amongst others) that I, the said Robert Weare, my executors or administrators, by an instrument in writing under my, or their, or one of their hands and seals, should particularly describe and ascertain the nature of the said Invention, and in what manner the same was to be performed, and cause the same to be filed in the Great Seal Patent
10 Office within six calendar months next and immediately after the date of the said Letters Patent.

NOW KNOW YE, that I, the said Robert Weare, do hereby declare the nature of my said Invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by
15 the following statement thereof, that is to say:—

This Invention has for its object improvements in apparatus for receiving and treating sewage and other noxious matters. In order to free the sewage from foul matter, so as to render the liquid innocuous and obtain from the sewage a valuable manure, I cause the sewage
20 discharged from the sewer, after it has passed through a catch pit where stones and sand are deposited, to enter a double tank. The inner sides of the tank are perforated and enclose and retain filtering materials. The liquid part of the sewage percolates through these materials from the interior of the tank to the outer unperforated walls or sides, and
25 escapes into succeeding filtering vessels and so to the outfall, whilst the solid part of the sewage remains within the first tank. The filtering materials I employ are charcoal and washed cinders, the former being reduced to the size of swan shot or thereabouts.

In the annexed Drawings Figure 1 is a section, and Fig. 2 a plan of
30 a system of apparatus for receiving and treating sewage according to my Invention, and in the manner which I prefer.

a is a main sewer discharging into a catch pit b , and thence into the interior of the tank c which I call the fæcal tank. c^1, c^1 , are perforated partitions of iron or wood, they are formed in panels of convenient size
35 and fitted into and supported by columns. c^2, c^2 , are similar partitions set at a distance of, say three feet outside the partitions c^1 , and the space between the two is filled up with a mixture of charcoal and washed cinders. The cinders may be of a size to pass through a quarter-inch

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sieve, whilst, as before stated, the charcoal may be about the size of swan shot. The tank *c* and the catch pit are arched over or otherwise closed at the top, so that in no case can they overflow, and man holes are provided to enter them. When the sewage comes down with unusual rapidity it accumulates in the sewer until a head of some feet is attained, 5 and this pressure hastens the passage of the liquid through the filtering material contained between the partitions *c*¹ and *c*². The liquid from the tank *c* passes into a tank *e*, it flows on to a perforated metal plate *e*¹, and falls as a shower on to a bed of cinders and charcoal supported on another perforated plate *e*². The liquid filters through this bed and 10 flows through another layer of filtering material sustained by perforated plates *e*³ into the trough *f*, where it meets the charcoal box *g* through which also it has to pass. The box fits into a recess formed for it in the brickwork, it is perforated at the front and back and is filled with granulated charcoal and fine washed cinders. Two of these boxes are 15 provided and they are used alternately each for about twenty-four hours, and when out of use they are raised by a crane and kept suspended, so that they may drain and be purified by exposure to the air; *h* is a tank in all respects similar to the tank *c*, the ashes employed in it however should be finer; *i* is another tank which receives the liquid after passing 20 the tank *h*, it contains several layers of charcoal and cinders separated by perforated plates. The cinders in this tank should be as small as the charcoal, and a cloth is laid on the lowest plate to prevent the passage of the filtering material through the perforations. The liquid from the tank *h* is sufficiently pure to be allowed to escape without injury or 25 nuisance into any river or stream. The filtering materials are changed from time to time, as may be necessary. The later tanks are replenished more frequently than the earlier, and any of the filtering material which is not sufficiently charged with fertilising material to be at once sold as manure is placed in the fæcal tank to there mix with solid materials 30 retained from the sewage; the fæcal tank is emptied from time to time when it becomes full, and its contents sold as manure. The sewage works are provided with two sets of apparatus, so that the sewage may be shut off from one set when it is requisite to empty any of the tanks. The size of the tanks will vary with the quantity of sewage to be dealt 35 with.

The Drawing is to the scale of $\frac{1}{8}$ of an inch to a foot, and an arrangement of this size is suitable for from one thousand to one thousand five

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hundred persons. All the tanks may advantageously be covered, and overflows may be provided to all the tanks beyond the faecal tank, to provide for exceptional cases in which the subsequent filtrations may not proceed with sufficient rapidity. The waste waters from manufactories,
5 where they are of a noxious nature, may be treated in this manner.

I claim the improvements in apparatus for receiving and treating sewage and other noxious matters substantially as described.

For constructing commodes or apparatus so as to deodorize or disinfect excrementitious matter I apply to a suitable receptacle an air-tight
10 cover fitted by means of an india-rubber or other packing ring, and in the cover is a perforated box containing charcoal or other deodorant or disinfectant. Any foul air escaping from the receptacle thus has to permeate the purifying material and is so rendered innocuous.

Figure 3 is a side view half in section of a child's commode thus
15 arranged.

a is a metal casing supporting the earthenware vessel b which is held in its place by metal bands c ; d is the lid capable of being fixed by a bayonet joint on to the casing a , and with a vulcanised india-rubber tubular ring d^1 to fit tightly on to the top of the vessel b ; d^2 is a chamber in
20 the lid with a perforated bottom and closed at the top by a plug d^3 through which, however, there is a vent hole. This chamber is filled with finely granulated or powdered charcoal or other deodorising and disinfecting powder. When the lid is applied a small quantity of this charcoal or powder will fall on the material in the vessel and partly
25 deodorise it, but the main use of the charcoal or disinfectant in the chamber is that it purifies any foul air passing it and rising from the vessel, and no air can issue except through the charcoal or disinfecting powder. To apply a cover so tightly to a commode that no gases shall escape can hardly be effectually accomplished, as variations of temperature
30 and pressure will induce a current through any passage however small, but the difficulty is effectually overcome by providing a vent which will obviate any tendency to escape elsewhere, and by causing the air to be deodorized and purified as it rises to this vent.

Figure 4 shews a commode constructed on this principle to be used
35 in lieu of a watercloset. It consists of a box with a closely fitting lid a provided with a chamber for charcoal or disinfecting powder, as already described. The box is divided into two compartments by a perforated

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partition *b* as is seen in Figure 5. Beneath the partition a drawer *c*, shewn separately at Figure 6, is received, and in this drawer is the pan or bucket *d*; its sides are perforated, as it is intended only to retain the solids it receives. The drawer which is made water-tight by a lining of pitch is packed full of granulated charcoal around the bucket, and this 5 absorbs the urine. The space between the partition *b* and the seat *e* is also packed with charcoal, with the exception of the passage or shoot *f*, the sides of which also are perforated, so that any gases rising from the bucket may have free access to the charcoal. The apparatus is emptied from time to time when it becomes full. The charcoal is then renewed, 10 and it and the whole of the contents of the vessel will be found valuable as manure.

I claim the construction of commodes with free vents for the air through deodorising material, substantially as described.

In witness whereof, I, the said Robert Weare, have hereunto set 15 my hand and seal, this Fourth day of November, in the year of our Lord One thousand eight hundred and seventy.

ROBT. WEARE. (L.S.)

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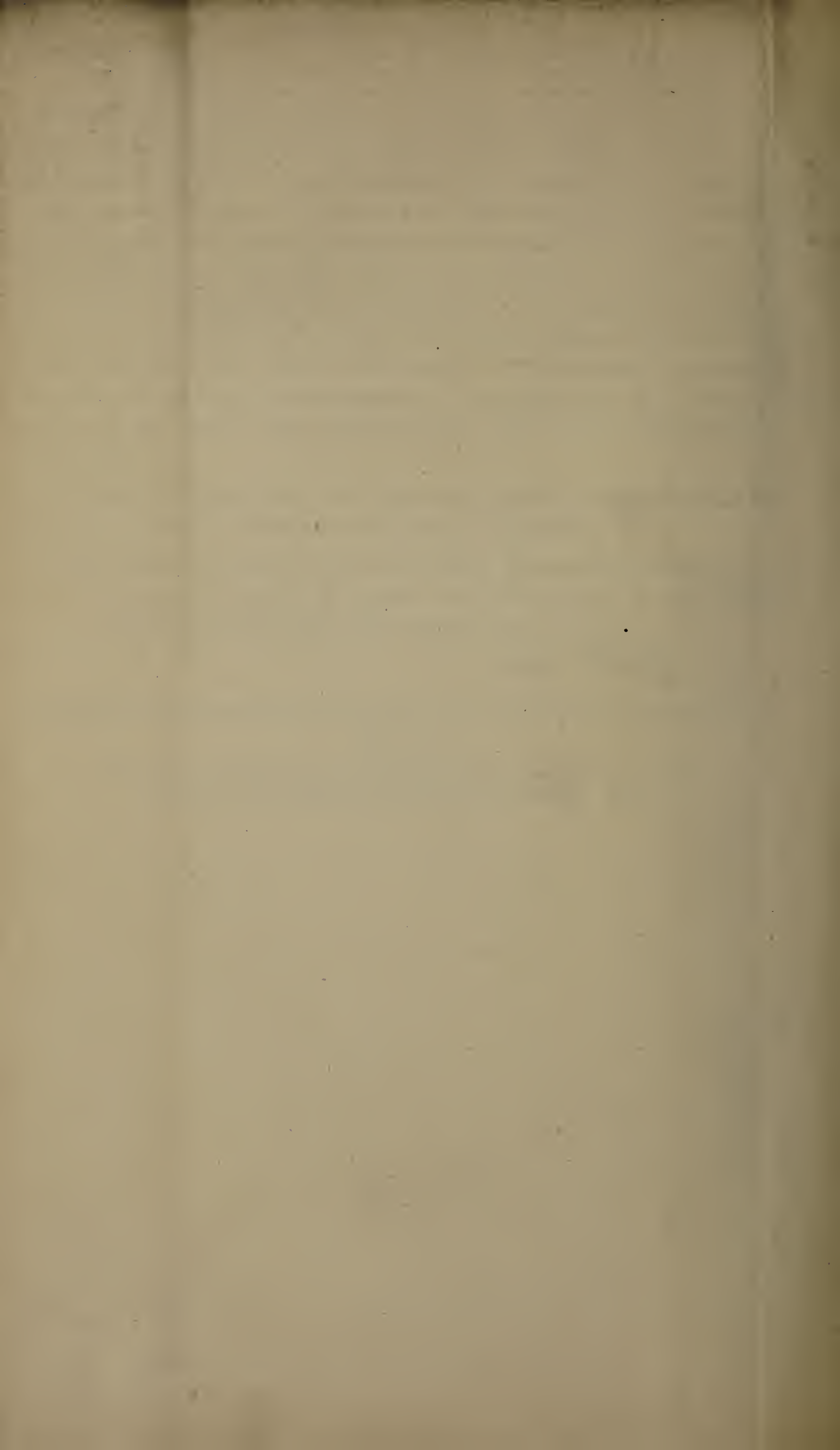


FIG. 1.

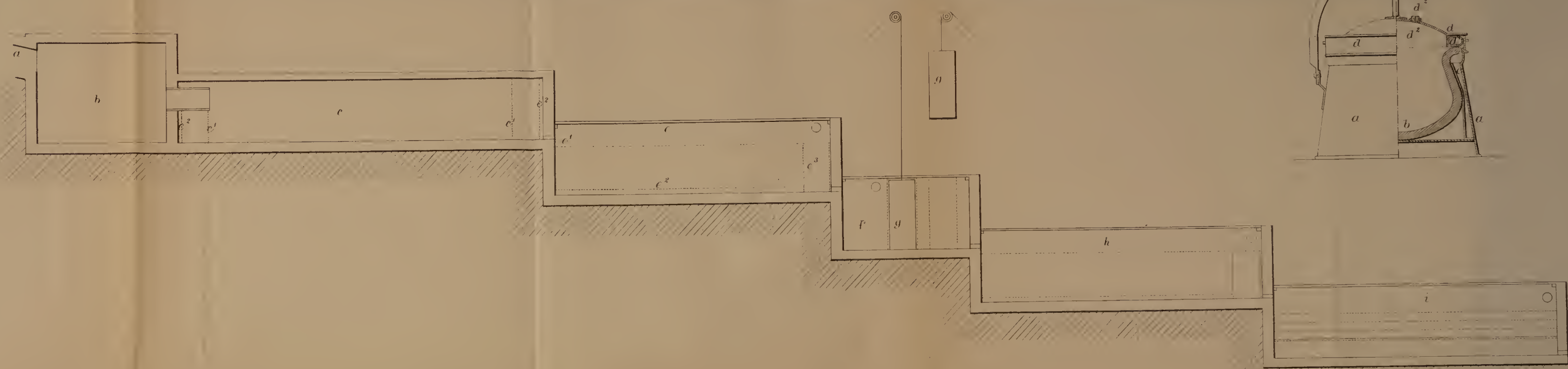


FIG. 2.

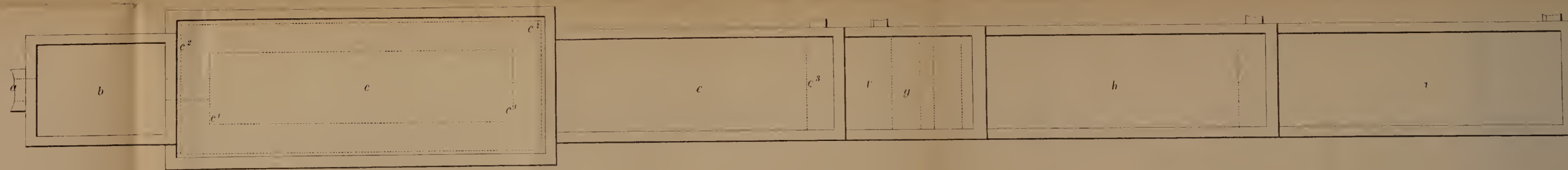


FIG. 3.

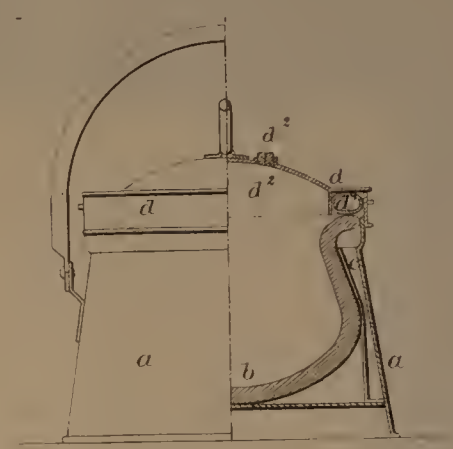


FIG. 5.

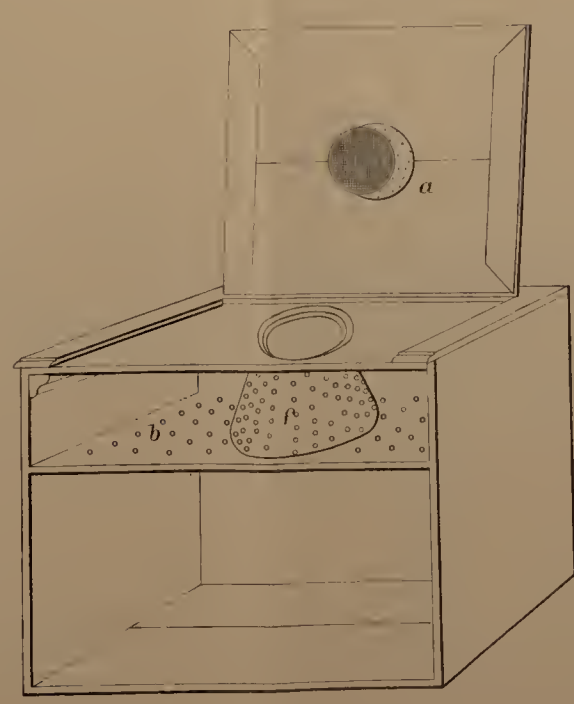


FIG. 6.

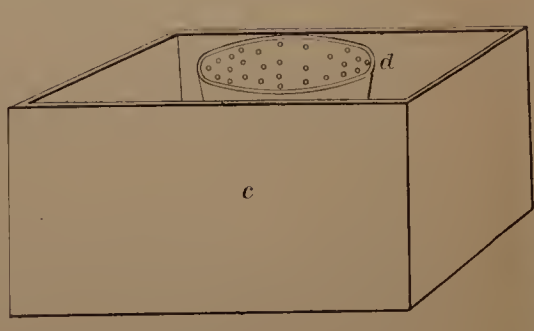


FIG. 4.

